

7/9/03

REMARKS

Claims 1-7 are pending in the application. Claims 1-7 have been rejected by the Examiner under 35 USC §103(a) as being unpatentable over Kawana (US Patent No. 5,661,574). Applicants respectfully disagree.

With regard to claim 1, the Examiner states that "...Kawana disclose subpixel modulation process in accordance with a code..." and that "...Kawana disclose inserting a start code into a subpixel modulation process..." The Examiner also refers to Kawana, column 4, lines 50-58, and column 5, lines 5-16 with regard to the latter, and column 4, lines 58-67 with regard to the former. Applicants respectfully disagree and submit that the Examiner may misunderstand the statements referred to in Kawana, and the difference between intensity modulation, disclosed in Kawana, and subpixel modulation, as claimed by Applicants in claim 1.

Kawana discloses, at column 4, lines 58-67, a method for inputting image data, adding information to that image data, forming an image based upon the image data with the added information, and controlling the formation of the image so that the portion of the image to which the information is added is formed in a lower resolution. There is no mention of a start code. Applicants believe that the Examiner may be confusing the addition of the information to the image data as the equivalent of a start code. However, it is the addition of the information to the data that is the modulation referred to in Kawana. Therefore, Kawana does not show, teach nor suggest inserting a start code, contrary to what the Examiner has stated.

With regard to the subpixel modulation process, the Examiner referred to column 4, lines 50-58 and column 5, lines 5-16. Column 4, lines 50-58 merely disclose a means for inputting image data, a means to add information to that image data, and a means for forming an image from the image data, where the portions of the image in which the information is

added is formed at a lower resolution than other portions of the image. The addition of the information modulates the density of a pixel, not the placement of a subpixel. As defined in Applicants' specification on page 7, lines 15-17, Applicants have defined subpixel modulation to be an alteration of the placement of the spot. The modulation process of Kawana alters the density, not the placement. See Kawana, column 7, lines 31-49.

Although the term subpixel modulation has been explicitly defined in the specification, Applicant has amended claim 1 to further include the definition of subpixel modulation. The ordinary meaning of subpixel is a pixel that is smaller than the pixel size of a given image, in other words, a pixel that would exist at a higher resolution. Applicants have amended the specification to more clearly define the term subpixel. Kawana does not modulate anything on a subpixel level, but actually needs two pixels to modulate one piece of information, as discussed in column 7. Applicants submit that claim 1 is patentably distinguishable over the prior art and request allowance of this claim.

With regard to claim 2, Kawana does not disclose that the code is repeated by subpixel modulation several times throughout an image. Applicants submit that claim 2 is patentably distinguishable over the prior art and request allowance of this claim.

With regard to claim 3, Kawana does not disclose a subpixel modulation process, discussed above, and therefore cannot disclose modulating subpixels at any level, much less two levels. The Examiners seems to be confusion the differing resolution used in Kawana, where the density modulation is performed at a lower resolution, with subpixel modulation, where the placement of a pixel is done at a higher resolution. Applicants submit that claim 3 is patentably distinguishable over the prior art and request allowance of this claim.

With regard to claims 4 and 5, Kawana does not disclose subpixel modulation and therefore cannot disclose full, half or no subpixel modulation. The text referred to by the Examiner is merely a discussion of printer resolution versus the density modulation

resolution, which is typically half of whatever the resolution of the printer is. See column 14, lines 47-57. Applicants' invention as claimed has levels of subpixel modulation that indicate the magnitude of the timing of the subpixel modulation. Therefore, Applicants submit that claims 4 and 5 are patentably distinguishable over the prior art and request allowance of this claim.

In claims 6-7, the Examiner admits that Kawana does not specifically disclose inserting a start code modulation sequence of 11110011 and stop code modulation sequence of 00011111. The Examiner has taken official notice that it would be obvious to do so in order to instruct remote apparatus to exactly at what point data processing should proceed. As stated in Applicants' specification, however, the start and stop codes are used to avoid confusion of the subpixel modulation sequences with subpixel modulation that occurs as part of image enhancement. Therefore, Applicants do not believe that this is obvious and request that the Examiner provide a reference indicating the insertion of stop codes and start codes in a subpixel modulation process. Applicants also submit that claims 6 and 7 are patentably distinguishable over the prior art and request allowance of this claim.

The prior art made of record and not relied upon has been reviewed and is not considered pertinent to applicants' disclosure.

No new matter has been added by this amendment. As stated above, and shown in Figure 2b, subpixel modulation occurs at pixel locations of a higher resolution than the native resolution of the printer. Applicants' amendments to the specification and the claims are merely expanding the information already existing with regard to the term subpixel modulation and the relationship between subpixel modulation and a printer resolution as depicted in Figure 2b.

Allowance of all claims is requested. The Examiner is encouraged to telephone the undersigned at (503) 222-3613 if it appears that an interview would be helpful in advancing the case.

Respectfully submitted,

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